UNITED STATES PATENT AND TRADEMARK OFFICE **CERTIFICATE OF CORRECTION**

PATENT NO. : 7,060,281 B1 APPLICATION NO. : 09/596746 Page 1 of 63

DATED

.: 09/596746 : June 13, 2006

INVENTOR(S)

: Raymond J. Dattwyler et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 45, Insert SEQ ID NOS. 53-86 after SEQ ID NO: 52 as attached.

Signed and Sealed this

Sixteenth Day of October, 2007

JON W. DUDAS
Director of the United States Patent and Trademark Office

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| | | gga Gly | | | | | | | | | | | | | | 528 |
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| Page | 4 | of | 63 |
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| | aaa Lys | | | | | _ | - | - | | | 864 |
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Gly Ala Lys Glu Leu Glu Glu Leu Phe Lys Ser Leu Glu Ser Leu Ser

345 Lys Ala Ala Gln Ala Ala Leu Thr Asn Ser Val Lys Glu Leu Thr Asn 360

340

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| | Lys | | | | | | | | | | | | | | | - |
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| | A. A. A. | | | | | | | | | | | | | | | 528 |
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| Lys | Lys | Pro | His | Met | Ala | Asn | Asn | Ser | Gly | Gly | Asp | Ser | Ala | Ser | Thr | |
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| | Ile | | | | | | | | | | | | | | | , |
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| | aaa | | | | | | | | | | | | | | | 816 |
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|---|-----------------------------------|----------------------------|-----------------------------------|-----------------------------------|-----------------|
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| ttt aaa tca (Phe Lys Ser 1 355 | | | | | |
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| Ile Asp Asn . | Asn Asn Gly 70 | | • • | Gln Asn Gly | Ser 80 |
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| Ser Lys Leu | | Glu Glu Leu 105 | | * - | Ala |
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| Asp Leu Gly | | | | | |

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ser Thr Leu Ile Lys Gln Lys Leu Asp Gly Leu Lys Asn Glu Gly Leu
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| | aat Asn | | | | | | | | | | | | | | | 720 |
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| | gct Ala | | | | | | | | | | | | | | | 864 |
| | gat Asp 290 | | | | | | | | | | | | | | | 912 |
| | ata Ile | | | | | | | | | | | | | | | 960 |
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1
gca caa aaa ggt gct gag tca att gga tcc tgt aat aat tca ggg aaa
Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys
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```

| | | | | | | | | | | | | | | | | 944 |
|------|------------|-----|-----|------------|-------|------|-----|------------|------------|-----|--------------|----------|-----|------------|-----------|-----|
| | ggg Gly | | | | | | | | | | | | | | | 144 |
| | • | 35 | | | | | 40 | | • | | | 45 | • | • | | |
| aat | ctt | aca | даа | ata | aat | aaa | aaa | att | acq | qat | tct | aat | gcg | gtt | tta | 192 |
| | Leu | | | | | | | | | | Ser | | | | | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| | gct | | | | | | | | | | | | | | | 240 |
| | Ala | Val | Lys | Glu | | Glu | Ala | Leu | Leu | | Ser | Ile | qaA | Glu | Ile 80 | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |
| | gct | | | | | | | | | | | | | | | 288 |
| Ala | Ala | Lys | Ala | Ile 85 | Gly | Lys | Lys | Ile | H19 | Gln | Asn | Aen | GIÅ | Leu 95 | Asp | |
| | | | | - | | | | | | | | | | | | |
| | gaa Glu | | | | | | | | | | | | | | | 336 |
| 1111 | GIU | TYL | 100 | urs | Wall | GTÅ | SEL | 105 | TEA | via | GIŞ | YIG | 110 | N10 | 116 | |
| • | | | | | | | | | | | | | | | *** | 204 |
| | acc Thr | | | | | | | | | | | | | | | 384 |
| | | 115 | | -,- | | -4 - | 120 | | | | | 125 | | • | | |
| 220 | gaa | 000 | 2++ | ast | | cat | 225 | 222 | tat | tot | ~ 0.0 | 858 | *** | act | aat | 432 |
| | Glu | | | | | | | | | | | | | | | 152 |
| | 130 | _ | | • | | 135 | | - | | | 140 | | | | | |
| aaa | tta | aaa | qaa | aaa | cac | aca | qat | ctt | qqt | aaa | qaa | qqt | gtt | act | gat | 480 |
| Lys | Leu | | | | His | | | | | Lys | | | | | Asp | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| | gat | | | | | | | | | | | | | | | 528 |
| Ala | Asp | Ala | Lys | Glu 165 | Ala | Ile | Leu | ГÀВ | Thr 170 | Asn | GJÀ | Thr | Lye | Thr 175 | Lys | |
| | | | | 103 | | | | | 170 | | | | | 1/3 | | |
| | gct | - | _ | | | | | | - | | _ | | | - | | 576 |
| GIY | Ala | Glu | 180 | Leu | GIÀ | Lys | Leu | Phe 185 | Glu | ser | Val | Glu | VA1 | Leu | ser | |
| | | | | | | | | | | | | | | | | |
| | gca | _ | | | _ | | - | | | - | | | | | - | 624 |
| Lys | Ala | 195 | nåa | GIU | Mec | ren. | 200 | Vall | ocr | AAT | ηγ | 205 | Ded | 1111 | 361 | |
| | | | | | _ ~.4 | | | | | | • | 4 | | | | |
| | gtt Val | | | | | | | | | | | | | | | 672 |
| - • | 210 | | | | | 215 | | | | | 220 | | | | . • | |

| | | gca Ala | | | | | | | | 720 |
|---|---|-------------------|---|---|-------|---|--|---|----|------|
| | | agt Ser 245 | | | | | | | | 768 |
| | | att Ile | | | | | | | | 816 |
| | | ggt Gly | | | | | | | | 864 |
| | | aat Asn | | | | | | | | 912 |
| | | caa Gln | | _ | _ | | | _ | | 960 |
| | | gaa Glu 325 | | | | | | | | 1008 |
| | | gaa Glu | | | | | | | | 1056 |
| | | aaa Lys | | | | | | | | 1104 |
| | | ctt Leu | | | | | | | | 1152 |
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Lys Glu Lys Ile Glu Asn Ala Lys Lys Cys Ser Glu Asp Phe Thr Lys 325 330 Lys Leu Glu Gly Glu His Ala Gln Leu Gly Ile Glu Asn Val Thr Asp 345 Glu Asn Ala Lys Lys Ala Ile Leu Ile Thr Asp Ala Ala Lys Asp Lys 360 Gly Ala Ala Glu Leu Glu Lys Leu Phe Lys Ala Val Glu Asn Leu Ala 375 Lys Ala Ala Lys Glu Met Leu Ala Asn Ser Val Lys Glu Leu 390 <210> 63 <211> 1185 <212> DNA <213> ospC Chimera <220> <221> CDS <222> (1) ... (1185) <400> 63 atg aga tta tta ata gga ttt gct tta gcg tta gct tta ata gga tgt 48 Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ala Leu Ile Gly Cys gca caa aaa ggt got gag tea att gga tee tgt aat aat tea ggg aaa 96 Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys 144 gat ggg aat aca tot gca aat tot get gat gag tot gtt aaa ggg cot Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro aat ett aca gaa ata agt aaa aaa att acg gat tet aat geg gtt tta 192 Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Val Leu 50 55 ctt gct gtg aaa gag gtt gaa gcg ttg ctg tca tct ata gat gag ctt 240 Leu Ala Val Lya Glu Val Glu Ala Leu Leu Ser Ser Ile Asp Glu Leu 65 70 75 get aan get att ggt aan ann ata ann ane gat ggt agt tta gat ant Ala Lys Ala Ile Gly Lys Lys Ile Lys Asn Asp Gly Ser Leu Asp Asn 85

| | gca Ala | | | | | | | | | | | | | | | 336 |
|-------------------|-------------------|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|-----|
| | tta Leu | | | | | | | | | | Gly | | | | | 384 |
| | gaa Glu 130 | | | | | | | | | | | | | | | 432 |
| | cta Leu | | | | | | | | | | | | | | | 480 |
| | aat Asn | | | | | | | | | | | | | | | 528 |
| - | Gly | _ | _ | _ | | - | _ | _ | | | | | _ | _ | | 576 |
| | aaa Lys | | | | | | | | | | | | | | | 624 |
| _ | cct Pro 210 | _ | _ | | | | | | | | - | | | | | 672 |
| gca Ala 225 | aat Asn | tct Ser | gct Ala | gat Asp | gag Glu 230 | tct Ser | gtt Val | aaa Lys | eja aaa | cct Pro 235 | aat Asn | ctt Leu | aca Thr | gaa Glu | ata Ile 240 | 720 |
| agt Ser | aaa Lys | aaa Lys | att Ile | aca Thr 245 | gaa Glu | tct Ser | aac Asn | gca Ala | gtt Val 250 | gtt Val | ctc Leu | gcc Ala | gtg Val | aaa Lys 255 | gaa Glu | 768 |
| | gaa Glu | | | | | | | | | | | | | | | 816 |
| aaa | aaa | ata | aaa | aac | gat | gtt | agt | tta | gat | aat | gag | gca | gat | CAC | aac | 864 |

| Lys | Lys | Ile 275 | ŗys | Asn | Asp | Val | Ser 280 | Leu | Asp | Asn | Glu | Ala 285 | Asp | His | Asn | |
|-----|-------------------|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|------|
| | tca Ser 290 | | | | | | | | | | | | | | | 912 |
| | ata Ile | _ | _ | | | _ | | | | - | _ | - | | | - | 960 |
| | gct Ala | | | | | | | | | | | | | | | 1008 |
| | aca Thr | | | | | | | | | | | | | | | 1056 |
| _ | att Ile | | | | | | - | | | _ | | _ | _ | - | | 1104 |
| | aag Lys 370 | | | | | | | | | | | | | | | 1152 |
| | ctt Leu | | | | | | | | | | | | | | | 1185 |

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<213> ospC Chimera

<400> 64

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 15

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 20
 25
 30

 Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro
 35
 40
 45

 Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Val Leu
 50
 55

Leu Ala Val Lys Glu Val Glu Ala Leu Leu Ser Ser Ile Asp Glu Leu Ala Lya Ala Ile Gly Lya Lya Ile Lya Asn Asp Gly Ser Leu Asp Asn Glu Ala Asn Arg Asn Glu Ser Leu Leu Ala Gly Ala Tyr Thr Ile Ser Thr Leu Ile Thr Gln Lys Leu Ser Lys Leu Asn Gly Ser Glu Gly Leu 120 Lys Glu Lys Ile Ala Ala Ala Lys Lys Cys Ser Glu Glu Phe Ser Thr 140 135 Lys Leu Lys Asp Asn His Ala Gln Leu Gly Ile Gln Gly Val Thr Asp Glu Asn Ala Lys Lys Ala Ile Leu Lys Ala Asn Ala Ala Gly Lys Asp 170 Lys Gly Val Glu Glu Leu Glu Lys Leu Ser Gly Ser Leu Glu Ser Leu 185 180 Ser Lys Ala Ala Lys Glu Met Leu Ala Asn Ser Val Lys Glu Leu Thr 200 Ser Pro Val Val His Gly Asn Asn Ser Gly Lys Asp Gly Asn Thr Ser 215 Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile 230 235 Ser Lys Lys Ile Thr Glu Ser Asn Ala Val Val Leu Ala Val Lys Glu 250 Val Glu Thr Leu Leu Thr Ser Ile Asp Glu Leu Ala Lys Ala Ile Gly 265 Lys Lys Ile Lys Asn Asp Val Ser Leu Asp Asn Glu Ala Asp His Asn 280 Gly Ser Leu Ile Ser Gly Ala Tyr Leu Ile Ser Asn Leu Ile Thr Lys 295 Lys Ile Ser Ala Ile Lys Asp Ser Gly Glu Leu Lys Ala Glu Ile Glu 310 315 Lys Ala Lys Lys Cys Ser Glu Glu Phe Thr Ala Lys Leu Lys Gly Glu 325 His Thr Asp Leu Gly Lys Glu Gly Val Thr Asp Asp Asn Ala Lys Lys 345 Ala Ile Leu Lys Thr Asn Asn Asp Lys Thr Lys Gly Ala Asp Glu Leu 360 Glu Lys Leu Phe Glu Ser Val Lys Asn Leu Ser Lys Ala Ala Lys Glu 375 Met Leu Thr Asn Ser Val Lys Glu Leu Thr Ser 390

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| <220> <221> CDS <222> (1)(1184) | | | | | | | | | | | | | | |
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| Ala Gln Lys Gl | | | tgt aat aat tca Cys Asn Asn Ser 30 | Gly Lys | | | | | | | | | | |
| | | | gag tot gtt aaa Glu Ser Val Lys 45 | | | | | | | | | | | |
| | | Lys Ile Thr | gat tot aat gog Asp Ser Asn Ala 60 | | | | | | | | | | | |
| | | | tca tct ata gat Ser Ser Ile Asp 75 | | | | | | | | | | | |
| | | | gat ggt agt tta Asp Gly Ser Lev | | | | | | | | | | | |
| | g Asn Glu Ser | | gga gct tat aca Gly Ala Tyr Thr 110 | : Ile Ser | | | | | | | | | | |
| | | | aac gga tca gas Asn Gly Ser Glu 125 | | | | | | | | | | | |
| | | Lys Lys Cys | tot gaa gag ttt Ser Glu Glu Phe 140 | | | | | | | | | | | |
| aaa cta aaa ga | t aat cat gca | cag ctt ggt | ata cag ggc gtt | act gat 480 | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | B |
|---|------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------|
| | Lys 145 | Leu | Lys | Asp | Aon | His 150 | Ala | Gln | Leu | Gly | Ile 155 | Gln | Gly | Val | Thr | ASP 160 | |
| | | | | | | gct Ala | | | | | | | | | | | 528 |
| • | aag Lys | ggc Gly | gtt Val | gaa Glu 180 | gaa Glu | att Leu | gaa Glu | aag Lys | ttg Leu 185 | tcc Ser | gga Gly | tca Ser | tta Leu | gaa Glu 190 | agc Ser | tta Leu | 576 |
| | tca Ser | aaa Lys | gca Ala 195 | gct Ala | aaa Lys | gag Glu | atg Met | ctt Leu 200 | g¢t Ala | aat Asn | tça Ser | gtt Val | aaa Lys 205 | gag Glu | ctt Leu | aca Thr | 624 |
| | | | | | | ggt Gly | | | | | | | | | | | 672 |
| | | | | | | gag Glu 230 | | | | | | | | | | | 720 |
| | agt Ser | aaa Lye | aaa Lys | att Ile | aca Thr 245 | gaa Glu | tct Ser | aac Asn | gca Ala | gtt Val 250 | gtt Val | ctg Leu | gct Ala | gtg Val | aaa Lys 255 | gaa Gļu | 768 |
| | att Ile | gaa Glu | act Thr | ttg Leu 260 | ctt Leu | gca Ala | tct Ser | ata Ile | gat Asp 265 | gaa Glu | ctt Leu | gct Ala | act Thr | aaa Lys 270 | gct Ala | att Ile | 816 |
| | | | | | | caa Gln | | | | | | | | | | cat His | 864 |
| | aat Asn | gga Gly 290 | aca Thr | ttg Leu | tta Leu | gca Ala | ggt Gly 295 | gct Ala | tat Tyr | aca Thr | ata Ile | tca Ser 300 | aaa Lys | cta Leu | ata Ile | aca Thr | 912 |
| | | | | | | ttg Leu 310 | | | | | | Leu | | | | att Ile 320 | 960 |
| | | | | | | Cys | | | | | | | | | | Gly | 1008 |
| | | | | | | | | | | | | | | | | | |

| | | | caa | | | | | | | | | | | | | 1056 |
|----------|----------------|-----------|------------|------------|-----|-----|-----------|------------|------------|-----|-----|-----------|------------|------------|---------|------|
| Glu | His | Ala | Gln 340 | Leu | Gly | Ile | Glu | Asn 345 | Val | Thr | qeA | Glu | Asn 350 | Ala | Lys | |
| | | | tta | | | | | | | | | | | | | 1104 |
| rya | Ala | 355 | Leu | 116 | TNY | Авр | 360 | AIG | тÀв | Asp | гув | 365 | WTG | wia | GIU | |
| | | | cta | | | | | | | | | | | | | 1152 |
| ren | 370 | rys | Leu | Pne | гуз | 375 | AGT | GIÜ | ABD | rea | 380 | nys | WIG | waa | nys | |
| | | | gct Ala | | | | | | | ac | | | | | | 1184 |
| 385 | Mec | reu | wra | VAII | 390 | Val | цув | GIU | Leu | | | | | | | |
| | | | | | | | | | | | | | | | | |
| |)> 66 l> 35 | | | | | | | | | | | | | | | |
| | 2> PI | | | | | | | | | | | | | | | |
| | | | Chime | era | | | | | | | | | | | | |
| |)> 66 | | | | | | | | | | | | | | | |
| Met 1 | Arg | Leu | Leu | Ile 5 | Gly | Phe | Ala | Leu | Ala 10 | Leu | Ala | Leu | Ile | Gly 15 | Сув | |
| Ala | GJu | Lys | Gly 20 | Ala | Glu | Ser | Ile | Gly 25 | Ser | Cys | Asn | Asn | Ser 30 | Gly | Lys | |
| qeA | Gly | Asn 35 | Thr | Ser | Ala | Asn | Ser 40 | Ala | Asp | Glu | Ser | Val 45 | Lÿs | Gly | Pro | |
| Asn | | Thr | Glu | Ile | Ser | Lys | Lys | Ile | Thr | Asp | | Asn | Ala | Val | Leu | |
| - | 50 | 47.3 | | ~ 3 | *** | 55 | | | • ••• | | 60 | 73.0 | 3 | ~ 1 | T 011 | |
| 65 | ATA | val | Lys | GIU | 70 | GIA | WIG | Leu | TEI | 75 | Ser | 116 | App | 910 | BC BC | |
| | Lys | Ala | Ile | Gly 85 | | Lys | Ile | Lys | Asn 90 | _ | Gly | Ser | Leu | Asp 95 | | |
| Glu | Ala | Asn | Arg | | Glu | ser | Leu | | | Gly | Ala | Tyr | Thr | | ser | |
| Thr | Leu | Ile | 100 Thr | Gln | Lys | Leu | Ser | 105 Lys | Leu | Asn | Gly | Ser | | Gly | Leu | |
| • | ~ 3 | | -1. | | | | | | | | | 125 | | C | (Tibere | |
| nåa | 130 | rås | Ile | WIE | WIG | 135 | måa | TAR | Cys | ser | 140 | GIU | rne | der | LIIE | |
| Lys | | Lys | Asp | Asn | His | | Gln | Leu | Gly | Ile | | Gly | ۷al | Thr | Asp | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| Glu | Asn | Ala | Lys | Lys 165 | Ala | Ile | Leu | Lys | Ala 170 | Asn | Ala | Ala | Gly | Lys 175 | Ąsp | |
| | | | | ~~~ | | | | | -,, | | | | | | | |

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Lys Gly Val Glu Glu Leu Glu Lys Leu Ser Gly Ser Leu Glu Ser Leu
                                185
            180
Ser Lys Ala Ala Lys Glu Met Leu Ala Asn Ser Val Lys Glu Leu Thr
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                                                205
        195
Ser Pro Val Val His Gly Asn Asn Ser Gly Lys Asp Gly Asn Thr Ser
Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile
                                        235
                    230
Ser Lys Lys Ile Thr Glu Ser Asn Ala Val Val Leu Ala Val Lys Glu
                                                         255
                245
                                    250
Ile Glu Thr Leu Leu Ala Ser Ile Asp Glu Leu Ala Thr Lys Ala Ile
                                265
Gly Lys Lys Ile Gln Gln Asn Gly Gly Leu Ala Val Glu Ala Gly His
                            280
Asn Gly Thr Leu Leu Ala Gly Ala Tyr Thr Ile Ser Lys Leu Ile Thr
                                            300
                        295
Gln Lys Leu Asp Gly Leu Lys Asn Ser Glu Lys Leu Lys Glu Lys Ile
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Glu Asn Ala Lys Lys Cys Ser Glu Asp Phe Thr Lys Lys Leu Glu Gly
                                    330
                325
Glu His Ala Gln Leu Gly Ile Glu Asn Val Thr Asp Glu Asn Ala Lys
                                 345
Lys Ala Ile Leu Ile Thr Asp Ala Ala Lys Asp Lys Gly Ala Ala Glu
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gea caa aaa ggt get gag tea att gga tee tgt aat aat tea ggg aaa
Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys
             20
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| gat Asp | GJY 333 | aat Asn 35 | aca Thr | tct Ser | gca Ala | aat Asn | tct Ser 40 | gct Ala | gat Asp | gag Glu | tct Ser | gtt Val 45 | aaa Lys | gly ggg | ect Pro | 144 |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----|
| aat Asn | ott Leu 50 | aca Thr | gaa Glu | ata Ile | agt Ser | aaa Lys 55 | aaa Lys | att Ile | acg Thr | gat Asp | tct Ser 60 | aat Asn | gcg Ala | gtt Val | tta Leu | 192 |
| ctt Leu 65 | got Ala | gtg Val | aaa Lys | gag Glu | gtt Val 70 | gaa Glu | gcg Ala | ttg Leu | ctg Leu | tca Ser 75 | tct Ser | ata Ile | gat Asp | gag Glu | ctt Leu 80 | 240 |
| gct Ala | aaa Lys | gct Ala | att Ile | ggt Gly 85 | aaa Lys | aaa Lys | ata Ile | aaa Lys | aac Asn 90 | gat Asp | ggt Gly | agt Ser | tta Leu | gat Asp 95 | aat Asn | 288 |
| gaa Glu | gca Ala | aat Asn | ege Arg 100 | aac Asn | gag Glu | tca Ser | ttg Leu | tta Leu 105 | gca Ala | Gly | gct Ala | tat Tyr | aca Thr 110 | ata Ile | tca Ser | 336 |
| acc Thr | tta Lau | ata Ile 115 | aca Thr | caa Gln | aaa Lys | tta Leu | agt Ser 120 | aaa Lys | tta Leu | aac Asn | gga Gly | tca Ser 125 | gaa Glu | ggt Gly | tta Leu | 384 |
| aag Lys | gaa Glu 130 | aag Lys | att | gcc Ala | gca Ala | gct Ala 135 | aag Lys | aaa Lys | tgc Cys | tet Ser | gaa Glu 140 | gag Glu | ttt Phe | agt Ser | act Thr | 432 |
| aaa Lys 145 | cta Leu | aaa Lys | gat Asp | aat Asn | cat His 150 | gca Ala | cag Gln | ctt Leu | ggt Gly | ata Ile 155 | cag Gln | gly ggc | gtt Val | act Thr | gat Asp 160 | 480 |
| gaa Glu | aat Asn | gca Ala | aaa Lya | aaa Lys 165 | get Ala | att Ile | tta Leu | aaa Lys | gca Ala 170 | aat Asn | gca Ala | gcg | ggt Gly | aaa Lys 175 | gat Asp | 528 |
| aag Lys | Gly | gtt Val | gaa Glu 180 | Glu | ctt Leu | gaa Glu | aag Lys | ttg Leu 185 | Ser | gga Gly | tça Ser | tta Leu | gaa Glu 190 | ag¢ Ser | tta Leu | 576 |
| tca Ser | aaa Lys | gca Ala 195 | Ala | aaa Lys | gag Glu | atg Met | Ctt Leu 200 | Ala | aat Asn | tca Ser | gtt Val | aaa Lys 205 | Glu | ctt Leu | aca Thr | 624 |

| Pag | e 30 | of | 63 |
|-----|------|----|----|
| | | | |

| agc | cct Pro 210 | gtt Val | gtc Val | cat His | ggt Gly | aat Asn 215 | aat Asn | tca Ser | aga Arg | aaa Lys | gat Asp 220 | Gly 999 | aat Aen | gca Ala | tct Ser | 672 |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|-------------------|-------------------|-------------------|-------------------|--------------------------|-------------------|------|
| aca Thr 225 | aat Asn | tct Ser | gcc Ala | gat Asp | gag Glu 230 | tct Ser | gtt Val | aaa Lys | G1 Y 999 | cct Pro 235 | aat Asn | ctt Leu | aca Thr | gaa Glu | ata Ile 240 | 720 |
| agt Ser | aaa Lys | aaa Lys | att Ile | aca Thr 245 | gaa Glu | tct Ser | aac Asn | gca Ala | gtt Val 250 | gtt Val | ctg Leu | gcc Ala | gtg Val | aaa Lys 255 | gaa Glu | 768 |
| gtt Val | gag Glu | acc Thr | tta Leu 260 | ctt Leu | gca Ala | tct Ser | ata Ile | gat Asp 265 | gaa Glu | ctt Leu | gct Ala | acc Thr | aaa Lys 270 | gct Ala | att Ile | 816 |
| ggt Gly | aag Lys | aaa Lys 275 | ata Ile | gly ggc | aat Asn | aat Asn | ggt Gly 280 | tta Leu | gag Glu | gcc Ala | aat Asn | cag Gln 285 | agt Ser | aaa Lys | aac Asn | 864 |
| aca Thr | tca Ser 290 | ttg Leu | tta Leu | tca Ser | gga Gly | gct Ala 295 | tat Tyr | gca Ala | ata Ile | tct Ser | gac Asp 300 | cta Leu | ata Ile | gca Ala | gaa Glu | 912 |
| aaa Lys 305 | tta Leu | aat Asn | gta Val | ttg Leu | aaa Lys 310 | aat Asn | gaa Glu | gaa Glu | tta Leu | aag Lys 315 | gaa Glu | aag Lys | att Ile | gat Asp | aca Thr 320 | 960 |
| gct Ala | aag Lys | caa Gln | tgt Cys | tct Ser 325 | aca Thr | gaa Glu | ttt Phe | act Thr | aat Asn 330 | aaa Lys | cta Leu | aaa Lys | agt Ser | gaa Glu 335 | cat His | 1008 |
| gca Ala | gtg Val | ctt Leu | ggt Gly 340 | ctg Leu | gac Asp | aat Asn | ctt Leu | act Thr 345 | qeA | gat Asp | aat Asn | gca Ala | çaa Gln 350 | Arg | gct Ala | 1056 |
| att Ile | tta Leu | aaa Lys 355 | Lys | cat His | gca Ala | aat Aen | aaa Lys 360 | gat Asp | aag Lys | Gly | gct Ala | gca Ala 365 | Glu | ctt Leu | gaa Glu | 1104 |
| aag Lys | tta Leu 370 | Phe | aaa Lys | gcg | gta Val | gaa Glu 375 | Asn | tta Leu | tca Ser | aaa Lys | gca Ala 380 | Ala | caa Gln | gac Asp | aca | 1152 |
| | aaa Lys | | | | | Glu | | | | | | | | | | 1184 |

<210> 68 <211> 394 <212> PRT <213> ospC Chimera

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Lys Leu Asn Val Leu Lys Asn Glu Glu Leu Lys Glu Lys Ile Asp Thr 305 310 315 Ala Lys Gln Cys Ser Thr Glu Phe Thr Asn Lys Leu Lys Ser Glu His 330 325 Ala Val Leu Gly Leu Asp Asn Leu Thr Asp Asp Asn Ala Gln Arg Ala 345 Ile Leu Lys Lys His Ala Asn Lys Asp Lys Gly Ala Ala Glu Leu Glu 360 Lys Leu Phe Lys Ala Val Glu Asn Leu Ser Lys Ala Ala Gln Asp Thr 380 Leu Lys Asn Ala Val Lys Glu Leu Thr Ser 385 390 <210> 69 <211> 1209 <212> DNA <213> ospC Chimera <220> <221> CDS <222> (1)...(1209) <400> 69 atg aga tta tta ata gga ttt gct tta gcg tta gct tta ata gga tgt 48 Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ile Gly Cys gca caa aaa ggt gct gag tca att gga tcc tgt aat aat tca ggg aaa Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys 144 gat ggg aat aca tot gca aat tot got gat gag tot gtt aaa ggg cot Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro 192 aat ott aca gaa ata agt aaa aaa att acg gat tot aat gog gtt tta Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Val Leu 50 55 ctt gct gtg aaa gag gtt gaa gcg ttg ctg tca tct ata gat gag ctt 240 Leu Ala Val Lys Glu Val Glu Ala Leu Leu Ser Ser Ile Asp Glu Leu 75 65 70 288 got ama got att ggt ama ama ata ama amo gmt ggt agt ttm gmt amt Ala Lys Ala Ile Gly Lys Lys Ile Lys Asn Asp Gly Ser Leu Asp Asn

| gaa Glu | gca Ala | aat Asn | cgc Arg 100 | aac Asn | gag Glu | tca Ser | ttg Leu | tta Leu 105 | gca Ala | gga Gly | gct Ala | tat Tyr | aca Thr 110 | ata Ile | tca Ser | 336 |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----|
| acc Thr | tta Leu | ata Ile 115 | aca Thr | caa Gln | aaa Lys | tta Leu | agt Ser 120 | aaa Lys | tta Leu | aac Asn | gga Gly | tca Ser 125 | gaa Glu | ggt Gly | tta Leu | 384 |
| aag Lys | gaa Glu 130 | aag Lys | att Ile | gee Ala | gca Ala | gct Ala 135 | aag Lys | aaa Lys | tgc Cys | tet Ser | gaa Glu 140 | gag Glu | ttt Phe | agt Ser | act Thr | 432 |
| aaa Lys 145 | cta Leu | rya Fya | gat Asp | aat Asn | cat His 150 | gca Ala | cag Gln | ctt Leu | ggt Gly | ata Ile 155 | cag Gln | Gly | gtt Val | act Thr | gat Asp 160 | 480 |
| gaa Glu | aat Asn | gca Ala | aaa Lys | aaa Lys 165 | gct Ala | att Ile | tta Leu | aaa Lys | gca Ala 170 | aat Asn | gça Ala | gcg Ala | ggt Gly | aaa Lys 175 | gat Asp | 528 |
| | ggc | | | | | | | | | | | | | | | 576 |
| tca Ser | aaa Lys | gca Ala 195 | gct Ala | aaa Lys | gag Glu | atg Met | ctt Leu 200 | gct Ala | aat Asn | tca Ser | gtt Val | aaa Lys 205 | gag | ctt Leu | aca Thr | 624 |
| | cct Pro 210 | Val | | | | | | | | | | | | | | 672 |
| aat Asn 225 | ect Pro | gat Asp | gag Glu | tct Ser | gca Ala 230 | aaa Lys | GJY | ect Pro | aat Asn | ctt Leu 235 | Thr | gta Val | ata Ile | agc Ser | aaa Lys 240 | 720 |
| aaa Lys | att Ile | aca Thr | gat Asp | tct Ser 245 | aat Asn | gca Ala | ttt Phe | tta Leu | ctg Leu 250 | gct Ala | gtg Val | aaa Lys | gaa Glu | gtt Val 255 | gag Glu | 768 |
| got Ala | ttg Leu | ctt Leu | tca Ser 260 | tot Ser | ata Ile | gat Asp | gaa Glu | ctt Leu 265 | Ser | aaa Lys | gct Ala | att Ile | ggt Gly 270 | Lys | aaa Lys | 816 |

| | aaa Lys | | | | | | | | 864 |
|-----|-------------------|---|--|--|--|--|--|--|------|
| | ata Ile 290 | | | | | | | | 912 |
| | gta Val | | | | | | | | 960 |
| | tgt Cys | | | | | | | | 1008 |
| | ggt Gly | | | | | | | | 1056 |
| | aca Thr | | | | | | | | 1104 |
| | aaa Lys 370 | | | | | | | | 1152 |
| | tca Ser | | | | | | | | 1200 |
| | cct Pro | | | | | | | | 1209 |
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| | 1> 4 | - | | | | | | | |
| | 2> P | | | | | | | | |

<212> PRT

<213> ospC Chimera

<400> 70

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Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro 40 Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Val Leu Leu Ala Val Lys Glu Val Glu Ala Leu Leu Ser Ser Ile Asp Glu Leu Ala Lys Ala Ile Gly Lys Lys Ile Lys Asn Asp Gly Ser Leu Asp Asn Glu Ala Asn Arg Asn Glu Ser Leu Leu Ala Gly Ala Tyr Thr Ile Ser 105 100 Thr Leu Ile Thr Gln Lys Leu Ser Lys Leu Asn Gly Ser Glu Gly Leu 120 Lys Glu Lys Ile Ala Ala Ala Lys Lys Cys Ser Glu Glu Phe Ser Thr 135 Lys Leu Lys Asp Asn His Ala Gln Leu Gly Ile Gln Gly Val Thr Asp Glu Asn Ala Lys Lys Ala Ile Leu Lys Ala Asn Ala Ala Gly Lys Asp 165 170 Lys Gly Val Glu Leu Glu Lys Leu Ser Gly Ser Leu Glu Ser Leu 185 Ser Lys Ala Ala Lys Glu Met Leu Ala Asn Ser Val Lys Glu Leu Thr 200 Ser Pro Val Val His Gly Asn Asn Ser Gly Gly Asp Ser Ala Ser Thr 215 Asn Pro Asp Glu Ser Ala Lys Gly Pro Asn Leu Thr Val Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Phe Leu Leu Ala Val Lys Glu Val Glu 245 250 Ala Leu Leu Ser Ser Ile Asp Glu Leu Ser Lys Ala Ile Gly Lys Lys 265 Ile Lys Asn Asp Gly Thr Leu Asp Asn Glu Ala Asn Arg Asn Glu Ser 280 Leu Ile Ala Gly Ala Tyr Glu Ile Ser Lys Leu Ile Thr Gln Lys Leu Ser Val Leu Asn Ser Glu Glu Leu Lys Lys Lys Ile Lys Glu Ala Lys 315 310 Asp Cys Ser Gln Lys Phe Thr Thr Lys Leu Lys Asp Ser His Ala Glu 325 330 Leu Gly Ile Gln Ser Val Gln Asp Asp Asn Ala Lys Lys Ala Ile Leu 345 Lys Thr His Gly Thr Lys Asp Lys Gly Ala Lys Glu Leu Glu Glu Leu Phe Lys Ser Leu Glu Ser Leu Ser Lys Ala Ala Gln Ala Ala Leu Thr 375 Asn Ser Val Lys Glu Leu Thr Asn Pro Val Val Ala Glu Ser Pro Lys 385 390 395 Lys Pro

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gca caa aaa ggt gct gag tca att gga tcc tgt aat aat tca gga aaa
Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys
            20
                               25
gat ggg aat gca tot gca aat tot gct gat gag tot gtt aaa ggg cot
                                                               144
Asp Gly Asn Ala Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro
aat ett aca gaa ata agt aaa aan att aca gaa tot aac gea gtt gtt
                                                               192
Asn Lou Thr Glu Ile Ser Lys Lys Ile Thr Glu Ser Asn Ala Val Val
ctg goo gtg aaa gaa gtt gag acc tta ctt gca tct ata gat gaa ctt
                                                               240
Leu Ala Val Lys Glu Val Glu Thr Leu Leu Ala Ser Ile Asp Glu Leu
 65
                    70
                                       75
                                                               288
got aco aaa got att ggt aaa aaa ata ggo aat aat ggt tta gag goo
Ala Thr Lys Ala Ile Gly Lys Lys Ile Gly Asn Asn Gly Leu Glu Ala
                85
                                    90
aat cag agt aaa aac aca tca ttg tta tca gga gct tat gca ata tct
                                                               336
Asn Gln Ser Lys Asn Thr Ser Leu Leu Ser Gly Ala Tyr Ala Ile Ser
           100
                               105
                                                               384
Asp Leu Ile Ala Glu Lys Leu Asn Val Leu Lys Asn Glu Glu Leu Lys
gaa aag att gat aca gct aag caa tgt tct aca gaa ttt act aat aaa
Glu Lys Ile Asp Thr Ala Lys Gln Cys Ser Thr Glu Phe Thr Asn Lys
    130
                       135
                                          140
```

| aaa Lys | | | | | | | | 480 |
|-------------------|--|--|--|--|--|--|--|------|
| gca Ala | | | | | | | | 528 |
| gca Ala | | | | | | | | 576 |
| gct Ala | | | | | | | | 624 |
| gtc Val 210 | | | | | | | | 672 |
| gct Ala | | | | | | | | 720 |
| att Ile | | | | | | | | 768 |
| ttg Leu | | | | | | | | 816 |
| aaa Lys | | | | | | | | 864 |
| ata Ile 290 | | | | | | | | 912 |
| gca Ala | | | | | | | | 960 |
| aaa Lys | | | | | | | | 1008 |

| _ | ctt Leu | | | _ | - | | - | _ | | _ | | _ | 1056 |
|---|-------------------|---|---|---|-------|---|---|---|---|---|--|-------|------|
| | aaa Lys | | | | | | | | | | | | 1104 |
| | ttt Phe 370 | _ | | - | | _ | | | _ | - | | | 1152 |
| | aat Asn | | _ | | | | - | | | | | | 1179 |

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<213> ospC Chimera

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```
Ala Ala Glu Leu Glu Lys Leu Phe Lys Ala Val Glu Asn Leu Ser Lys
                                185
Ala Ala Gln Asp Thr Leu Lys Asn Ala Val Lys Glu Leu Thr Ser Pro
                            200
Ile Val His Gly Asn Asn Ser Gly Lys Asp Gly Asn Thr Ser Ala Asn
Ser Ala Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile Ser Lys
                                        235
                    230
Lys Ile Thr Glu Ser Asn Ala Val Val Leu Ala Val Lys Glu Val Glu
                                    250
                245
Thr Leu Leu Thr Ser Ile Asp Glu Leu Ala Lys Ala Ile Gly Lys Lys
                                265
Ile Lys Asn Asp Val Ser Leu Asp Asn Glu Ala Asp His Asn Gly Ser
                            280
Leu Ile Ser Gly Ala Tyr Leu Ile Ser Asn Leu Ile Thr Lys Lys Ile
                                            300
                        295
Ser Ala Ile Lye Asp Ser Gly Glu Leu Lys Ala Glu Ile Glu Lys Ala
                    310
                                        315
Lys Lys Cys Ser Glu Glu Phe Thr Ala Lys Leu Lys Gly Glu His Thr
                325
Asp Leu Gly Lys Glu Gly Val Thr Asp Asp Asn Ala Lys Lys Ala Ile
            340
                                345
Leu Lys Thr Asn Asn Asp Lys Thr Lys Gly Ala Asp Glu Leu Glu Lys
        355
                            360
                                                365
Leu Phe Glu Ser Val Lys Asn Leu Ser Lys Ala Ala Lys Glu Met Leu
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                                            380
Thr Asn Ser Val Lys Glu Leu Thr Ser
385
                    390
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```

| | | aaa Lys | | | | | | | | | | | | | | 96 |
|------------------|------------------|-------------------|------------|------------|------------------|------------------|-------------------|--------------------|------------|------------------|------------------|-------------------|------------|------------|------------------|-----|
| | | aat Asn 35 | | | | | | | | | | | | | | 144 |
| aat Asn | ctt Leu 50 | aca Thr | gaa Glu | ata Ile | agt Ser | aaa Lys 55 | aaa Lys | att Ile | aca Thr | gaa Glu | tet Ser 60 | aac Asn | gca Ala | gtt Val | gtt Val | 192 |
| ctg Leu 65 | gcc Ala | gtg Val | aaa Lys | gaa Glu | gtt Val 70 | gag Glu | acc Thr | tta Leu | ctt Leu | gca Ala 75 | tct Ser | ata Ile | gat Asp | gaa Glu | ctt Leu 80 | 240 |
| | | aaa Lys | | | | | | | | | | | | | | 288 |
| | | agt Ser | | | | | | | | | | | | | | 336 |
| gac | cta Leu | ata Ile 115 | gca Ala | gaa Glu | aaa Lys | tta Leu | aat Asn 120 | gta Val | ttg Leu | aaa Lys | aaț Asn | gaa Glu 125 | gaa Glu | tta Leu | aag Lys | 384 |
| Glu | Lys 130 | att Ile | Asp | Thr | Ala | Lys 135 | Gln | Сув | Ser | Thr | Glu 140 | Phe | Thr | Asn | Lys | 432 |
| Leu 145 | Lys | agt Ser | Ğlu | His | A1a 150 | Val | Leu | Gly | Leu | Asp 155 | neA | Leu | Thr | Asp | Asp 160 | 480 |
| Aen | Ala | · | Arg | Ala 165 | Ile | Leu | Lys | Гуs | His 170 | Ala | Aen | Lys | Asp | Lys 175 | Gly | 528 |
| Ala | Ala | gaa Glu | Leu 180 | Glu | Lys | Leu | Phe | L ув 185 | Ala | Val | Glu | Aşn | Leu 190 | Ser | Lys | 576 |
| gca Ala | gct Ala | caa Gln 195 | Asp | aca Thr | tta Leu | aaa Lys | aat Asn 200 | Ala | gtt Val | aaa Lys | gag Glu | ctt Leu 205 | aca | agt Ser | ect Pro | 624 |

| Page 41 o | it 6 | 53 |
|-----------|------|----|
|-----------|------|----|

| | | | | | | | | | | • |
|---|-------------------|---|-------|---|--|---|--|---|-------|------|
| | gte Val 210 | | | | | _ | | | - | 672 |
| | gct Ala | | | | | | | | | 720 |
| | att Ile | | | | | | | | | 768 |
| | ttg Leu | | | | | | | | | 816 |
| | ata Ile | | | | | | | | | 864 |
| | ttg Leu 290 | • | _ | | | | | | | 912 |
| | gat Asp | | | | | | | | | 960 |
| _ | aag Lys | _ | _ | _ | | | | _ | _ | 1008 |
| | caa G1n | | | | | | | | | 1056 |
| | tta Leu | | | | | | | | | 1104 |
| | cta Leu 370 | | | | | | | | | 1152 |

ctt gct aat tca gtt aaa gag ctt ac Leu Ala Asn Ser Val Lys Glu Leu 385

<210> 74 <211> 392 <212> PRT <213> ospC Chimera

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Lys Ile Gln Gln Asn Gly Gly Leu Ala Val Glu Ala Gly His Asn Gly
Thr Leu Leu Ala Gly Ala Tyr Thr Ile Ser Lys Leu Ile Thr Gln Lys
                         295
Leu Asp Gly Leu Lys Asn Ser Glu Lys Leu Lys Glu Lys Ile Clu Asn
                    310
Ala Lys Lys Cys Ser Glu Asp Phe Thr Lys Lys Leu Glu Gly Glu His
                                     330
                325
Ala Gln Leu Gly Ile Glu Asn Val Thr Asp Glu Asn Ala Lys Lys Ala
                                 345
Ile Leu Ile Thr Asp Ala Ala Lys Asp Lys Gly Ala Ala Glu Leu Glu
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Lys Leu Phe Lys Ala Val Glu Asn Leu Ala Lys Ala Ala Lys Glu Met
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Leu Ala Asn Ser Val Lys Glu Leu
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Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ala Leu Ile Gly Cys
 1
                                                          15
goa caa aaa ggt gct gag tca att gga tcc tgt aat aat tca gga aaa
                                                                   96
Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys
             20
                                  25
gat ggg aat gca tot gca aat tot got gat gag tot gtt aaa ggg cot
                                                                   144
Asp Gly Asn Ala Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro
aat ott aca gaa ata agt aaa aaa att aca gaa tot aac gca gtt gtt
                                                                   192
Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Glu Ser Asn Ala Val Val
                                                                   240
ctg gcc gtg aaa gaa gtt gag acc tta ctt gca tct ata gat gaa ctt
Leu Ala Val Lys Glu Val Glu Thr Leu Leu Ala Ser Ile Asp Glu Leu
                      70
                                          75
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| gct Ala | acc Thr | aaa Lys | gct Ala | att Ile 85 | ggt Gly | aaa Lys | aaa Lys | ata Ile | gge Gly 90 | aat Asn | aat Asn | ggt Gly | tta Leu | gag Glu 95 | gcc Ala | 288 |
|------------|-------------------|-------------------|-------------------|-------------------|------------|-------------------|-------------------|-------------------|-------------------|------------|-------------------|-------------------|-------------------|-------------------|------------|-----|
| | cag Gln | | | | | | _ | | | | - | | _ | | | 336 |
| | cta Leu | | | | | | | | | | | | | | | 384 |
| | aag Lys 130 | | | | | | | | | | | | | | | 432 |
| | aaa Lys | | | | | | | | | | | | | | | 480 |
| aat Asn | gca Ala | caa Gln | aga Arg | gct Ala 165 | att Ile | tta Leu | aaa Lys | aaa Lys | cat His 170 | gca Ala | aat Asn | aaa Lys | gat Asp | aag Lys 175 | ggt Gly | 528 |
| gct Ala | gca Ala | gaa Glu | ctt Leu 180 | gaa Glu | aag Lys | tta Leu | ttt Phe | aaa Lys 185 | gcg Ala | gta Val | gaa Glu | aac Asn | tta Leu 190 | tca Ser | aaa Lys | 576 |
| gca Ala | gct Ala | caa Gln 195 | gac Asp | aca Thr | tta Leu | aaa Lys | aat Asn 200 | gct Ala | gtt Val | aaa Lys | gag Glu | ctt Leu 205 | aca Thr | agt Ser | cct Pro | 624 |
| att Ile | gtc Val 210 | cat His | ggt Gly | aat Asn | aat Asn | tca Ser 215 | aga Arg | aaa Lys | gat Asp | gly 999 | aat Asn 220 | gca Ala | tct Ser | aca Thr | aat Asn | 672 |
| | gcc Ala | | | | | | | | | | | | | | | 720 |
| aaa Lys | att Ile | aca Thr | gaa Glu | tet Ser 245 | aac Asn | gca Ala | gtt Val | gtt Val | ctg Leu 250 | gcc Ala | gtg Val | aaa Lys | gaa Glu | gtt Val 255 | Glu | 768 |

| | tta Leu | | | | | | | | | | | | | | | 816 |
|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|------|
| | ata Ile | | | | | | | | | | | | | | | 864 |
| ttg Leu | tta Leu 290 | tca Ser | gga Gly | gct Ala | tat Tyr | gca Ala 295 | ata Ile | tct Ser | gac Asp | cta Leu | ata Ile 300 | gca Ala | gaa Glu | aaa Lys | tta Leu | 912 |
| | gta Val | | | | | | | | | | | | | | | 960 |
| | tgt Cys | | | | | | | | | | | | | | | 1008 |
| | ggt Gly | | | | | | | | | | | | | | | 1056 |
| aaa Lys | aaa Lys | cat His 355 | gca Ala | aat Asn | aaa Lys | gat Asp | aag Lys 360 | ggt Gly | gct Ala | gca Ala | gaa Glu | ctt Leu 365 | gaa Glu | aag Lys | tta Leu | 1104 |
| ttt Phe | aaa Lys 370 | gcg Ala | gta Val | gaa Glu | aac Asn | tta Leu 375 | tca Ser | aaa Lys | gca Ala | gct Ala | caa Gln 380 | yab | aca Thr | tta Leu | raa Lys | 1152 |
| | gct Ala | | | | | Thr | _ | | | | | | | | | 1178 |
| | D> 70 | - | | | | | | | | | | | | | | |

<210> 76 <211> 392 <212> PRT

<213> ospC Chimera

<400> 76

Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ala Leu Ile Gly Cys 1 5 10 10 15 Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys 20 25 30 Asp Gly Asn Ala Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro 40 Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Glu Ser Asn Ala Val Val Leu Ala Val Lys Glu Val Glu Thr Leu Leu Ala Ser Ile Asp Glu Leu Ala Thr Lys Ala Ile Gly Lys Lys Ile Gly Asn Asn Gly Leu Glu Ala Asn Gln Ser Lys Asn Thr Ser Leu Leu Ser Gly Ala Tyr Ala Ile Ser 105 Asp Leu Ile Ala Glu Lys Leu Asn Val Leu Lys Asn Glu Glu Leu Lys 120 Glu Lys Ile Asp Thr Ala Lys Gln Cys Ser Thr Glu Phe Thr Asn Lys 135 140 Lou Lys Ser Glu His Ala Val Leu Gly Leu Asp Asn Leu Thr Asp Asp Asn Ala Gln Arg Ala Ile Leu Lys Lys His Ala Asn Lys Asp Lys Gly Ala Ala Glu Leu Glu Lys Leu Phe Lys Ala Val Glu Asn Leu Ser Lys 185 Ala Ala Gln Asp Thr Leu Lys Asn Ala Val Lys Glu Leu Thr Ser Pro 200 Ile Val His Gly Asn Asn Ser Arg Lys Asp Gly Asn Ala Ser Thr Asn 215 Ser Ala Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile Ser Lys 230 235 Lys Ile Thr Glu Ser Asn Ala Val Val Leu Ala Val Lys Glu Val Glu 245 250 Thr Leu Leu Ala Ser Ile Asp Glu Leu Ala Thr Lys Ala Ile Gly Lys 265 Lys Ile Gly Asn Asn Gly Leu Glu Ala Asn Gln Ser Lys Asn Thr Ser 285 280 Leu Leu Ser Gly Ala Tyr Ala Ile Ser Asp Leu Ile Ala Glu Lys Leu 295 Asn Val Leu Lys Asn Glu Glu Leu Lys Glu Lys Ile Asp Thr Ala Lys 310 Gln Cys Ser Thr Glu Phe Thr Asn Lys Leu Lys Ser Glu His Ala Val 325 330 Leu Gly Leu Asp Asn Leu Thr Asp Asp Asn Ala Gln Arg Ala Ile Leu 345 Lys Lys His Ala Asn Lys Asp Lys Gly Ala Ala Glu Leu Glu Lys Leu 360 Phe Lys Ala Val Glu Asn Leu Ser Lys Ala Ala Gln Asp Thr Leu Lys 375 Asn Ala Val Lys Glu Leu Thr Ser 385 390

<210> 77 <211> 1230 <212> DNA <213> ospC Chimera <220> <221> CDS <222> (1) ... (1230) <400> 77 atg aga tta tta ata gga ttt gct tta gcg tta gct tta ata gga tgt 48 Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ile Gly Cys 96 gca caa aaa ggt gct gag tca att gga tcc tgt aat aat tca ggg aaa Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys 25 20 30 gat ggg aat aca tot goa aat tot got gat gag tot gtt aaa ggg cot 144 Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro 35 40 aat ett aca gaa ata agt aaa aaa att acg gat tet aat geg git tia 192 Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Val Leu 50 240 ctt get gtg aaa gag gtt gaa geg ttg etg tea tet ata gat gaa att Leu Ala Val Lys Glu Val Glu Ala Leu Leu Ser Ser Ile Asp Glu Ile 65 70 get get aaa get att ggt aaa aaa ata cac caa aat aat ggt ttg gat 288 Ala Ala Lys Ala Ile Gly Lys Lys Ile His Gln Asn Asn Gly Leu Asp acc gaa tat aat cac aat gga tca ttg tta gcg gga gct tat gca ata 336 Thr Glu Tyr Asn His Asn Gly Ser Leu Leu Ala Gly Ala Tyr Ala Ile 100 105 384 tca acc cta ata aaa caa aaa tta gat gga ttg aaa aat gaa gga tta Ser Thr Leu Ile Lys Gln Lys Leu Asp Gly Leu Lys Asn Glu Gly Leu 115 120 125 ang gan ann att gat gog got ang ann tgt tot gan aca tit act ant

| Lya | Glu 130 | Lys | Ile | Asp | Ala | Ala 135 | Lys | Ľув | Сув | Ser | Glu 140 | Thr | Phe | Thr | Asn | |
|------------|-------------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|-------------------|-----|
| | tta Leu | | | | | | | | | | | | | | | 480 |
| | gat Asp | | | | | | | | | | | | | | | 528 |
| ggt Gly | gct Ala | gaa Glu | gaa Glu 180 | ctt Leu | gga Gly | aaa Lys | tta Leu | ttt Phe 185 | gaa Glu | tca Ser | gta Val | gag Glu | gtc Val 190 | ttg Leu | tca Ser | 576 |
| aaa Lys | gca Ala | gct Ala 195 | aaa Lys | gag Glu | atg Met | ctt Leu | gct Ala 200 | aat Asn | tca Ser | gtt Val | aaa Lys | gag Glu 205 | ctt Leu | aca Thr | agc Ser | 624 |
| | gtt Val 210 | | | | | | | | | | | | | | | 672 |
| | Gly ggg | | | | | | | | | | | | | | | 720 |
| | ctt Leu | | | | | | | | | | | | | | | 768 |
| | gct Ala | | | | | | | | | | | | | | | 816 |
| | aaa Lys | • | | | | | | Lys | | | | | Leu | - | | 864 |
| | gca Ala 290 | | | | | | | | | | | Tyr | | | | 912 |
| | | | | | | | | | | | Ser | | | | aag Lys 320 | 960 |

| | | | gag Glu 325 | | | | | | 1008 |
|---|-------|---|-------------------|--|--|--|--|--|------|
| | | | cat His | | | | | | 1056 |
| | | | gct Ala | | | | | | 1104 |
| | | | gaa Glu | | | | | | 1152 |
| | | | gca Ala | | | | | | 1200 |
| • | _ | _ | agt Ser 405 | | | | | | 1230 |

<210> 78 <211> 409 <212> PRT <213> ospC Chimera

<400> 78

 Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ala Leu Ile Gly Cys

 1
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 Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys

 20
 25

 Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro

 35
 40

 Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Val Leu

 50
 55

 60

 Leu Ala Val Lys Glu Val Glu Ala Leu Leu Ser Ser Ile Asp Glu Ile

 65
 70

 Ala Ala Lys Ala Ile Gly Lys Lys Ile His Gln Asn Asn Gly Leu Asp

 85
 90

 95

 Thr Glu Tyr Asn His Asn Gly Ser Leu Leu Ala Gly Ala Tyr Ala Ile

 100
 105

 105
 110

 Ser Thr Leu Ile Lys Gln Lys Leu Asp Gly Leu Lys Asn Glu Gly Leu

 115
 120

Lys Glu Lys Ile Asp Ala Ala Lys Lys Cys Ser Glu Thr Phe Thr Asn 135 Lys Leu Lys Glu Lys His Thr Asp Leu Gly Lys Glu Gly Val Thr Asp 150 155 Ala Asp Ala Lys Glu Ala Ile Leu Lys Thr Asn Gly Thr Lys Thr Lys 165 170 Gly Ala Glu Glu Leu Gly Lys Leu Phe Glu Ser Val Glu Val Leu Ser 185 Lys Ala Ala Lys Glu Met Leu Ala Asn Ser Val Lys Glu Leu Thr Ser 200 205 Pro Val Val Ala Glu Ser Pro Lys Lys Pro Phe His Gly Asn Asn Ser 220 215 Gly Gly Asp Ser Ala Ser Thr Asn Pro Asp Glu Ser Ala Lys Gly Pro 230 Asn Leu Thr Val Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Phe Leu 250 245 Leu Ala Val Lys Glu Val Glu Ala Leu Leu Ser Ser Ile Asp Glu Leu 265 270 Ser Lys Ala Ile Gly Lys Lys Ile Lys Asn Asp Gly Thr Leu Asp Asn 280 Glu Ala Asn Arg Asn Glu Ser Leu Ile Ala Gly Ala Tyr Glu Ile Ser 295 Lys Leu Ile Thr Gln Lys Leu Ser Val Leu Asn Ser Glu Glu Leu Lys 315 310 Lys Lys Ile Lys Glu Ala Lys Asp Cys Ser Gln Lys Fhe Thr Thr Lys 330 Leu Lys Asp Ser His Ala Glu Leu Gly Ile Gln Ser Val Gln Asp Asp 340 345 Asn Ala Lys Lys Ala Ile Leu Lys Thr His Gly Thr Lys Asp Lys Gly 360 Ala Lys Glu Leu Glu Glu Leu Phe Lys Ser Leu Glu Ser Leu Ser Lys 375 Ala Ala Gln Ala Ala Leu Thr Asn Ser Val Lys Glu Leu Thr Asn Pro 395 390 Val Val Ala Glu Ser Pro Lys Lys Pro 405

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<210> 79
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<212> DNA
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<222> (1)...(1209)
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| Gly | Ala | Glu | Glu 180 | Leu | Gly | Lys | Leu | Phe 185 | Glu | Ser | Val | Glu | Val 190 | Leu | Ser | |
|-----|-----|-----|------------|-----|-------------------|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|------|
| | | | | | atg Met | | | | | | | | | | | 624 |
| | | | | | agt Ser | | | | | | | | | | | 672 |
| | | | | | aca Thr 230 | | | | | | | | | | | 720 |
| | | | | | gaa Glu | | | | | | | | | | | 768 |
| | | | | | aaa Lys | | | | | | | | | | | 816 |
| | | | | | att Ile | | | | | | | | | | | 864 |
| | | | | | cac His | | | | | | | | | | | 912 |
| | | | | | aca Thr 310 | | | | _ | _ | | | _ | | | 960 |
| | | | | | att Ile | | | | | | | | | | | 1008 |
| | | | | | Gly | | | | | | | | | | | 1056 |
| | _ | _ | | _ | aaa Lys | | _ | | | | | | | _ | | 1104 |

act aag ggc gct gat gaa ctt gaa aag tta ttt gaa tca gta aaa aac 1152 Thr Lys Gly Ala Asp Glu Leu Glu Lys Leu Phe Glu Ser Val Lys Asn 370 375 ttg tca asa gca gct asa gag atg ctt act ast tca gtt asa gag ctt 1200 Leu Ser Lys Ala Ala Lys Glu Met Leu Thr Asn Ser Val Lys Glu Leu 385 390 aca agc taa 1209 Thr Ser . <210> 80 <211> 402 <212> PRT <213> ospC Chimera <400> 80 Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ala Leu Ile Gly Cys 10 Ala Gin Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Val Leu Leu Ala Val Lys Glu Val Glu Ala Leu Leu Ser Ser Ile Asp Glu Ile Ala Ala Lys Ala Ile Gly Lys Lys Ile His Gln Asn Asn Gly Leu Asp 90 Thr Glu Tyr Asn His Asn Gly Ser Leu Leu Ala Gly Ala Tyr Ala Ile 105 Ser Thr Leu Ile Lys Gln Lys Leu Asp Gly Leu Lys Asn Glu Gly Leu Lys Glu Lys Ile Asp Ala Ala Lys Lys Cys Ser Glu Thr Phe Thr Asn 130 135 140 Lys Leu Lys Glu Lys His Thr Asp Leu Gly Lys Glu Gly Val Thr Asp 155 Ala Asp Ala Lys Glu Ala Ile Leu Lys Thr Asn Gly Thr Lys Thr Lys 170 165 Gly Ala Glu Glu Leu Gly Lys Leu Phe Glu Ser Val Glu Val Leu Ser Lys Ala Ala Lys Glu Met Leu Ala Asn Ser Val Lys Glu Leu Thr Ser 200 205 Pro Val Val Ala Glu Ser Pro Lys Lys Pro Ser Met Val Asn Asn Ser 210

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Gly Lys Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys
                    230
Gly Pro Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Glu Ser Asn Ala
                245
                                    250
Val Val Leu Ala Val Lys Glu Val Glu Thr Leu Leu Thr Ser Ile Asp
Glu Leu Ala Lys Ala Ile Gly Lys Lys Ile Lys Asn Asp Val Ser Leu
Asp Asn Glu Ala Asp His Asn Gly Ser Leu Ile Ser Gly Ala Tyr Leu
                        295
Ile Ser Asn Leu Ile Thr Lys Lys Ile Ser Ala Ile Lys Asp Ser Gly
                    310
Glu Leu Lys Ala Glu Ile Glu Lys Ala Lys Lys Cys Ser Glu Glu Phe
                                     330
                325
Thr Ala Lys Leu Lys Gly Glu His Thr Asp Leu Gly Lys Glu Gly Val
Thr Asp Asp Asn Ala Lys Lys Ala Ile Leu Lys Thr Asn Asn Asp Lys
Thr Lys Gly Ala Asp Glu Leu Glu Lys Leu Phe Glu Ser Val Lys Asn
                        375
                                             3B0
Leu Ser Lys Ala Ala Lys Glu Met Leu Thr Asn Ser Val Lys Glu Leu
385
                    390
                                         395
Thr Ser
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<213> ospC Chimera
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<221> CDS
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Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ala Leu Ile Gly Cys
gca caa aaa ggt gct gag tca att gga tcc tgt aat aat tca ggg aaa
                                                                   96
Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys
                                                                   144
gat ggg aat aca tot goa aat tot get gat gag tot gtt aaa ggg cot
Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro
         35
                                                  45
                              40
```

| ctt Leu 50 | | | | | | | | | | | | 192 |
|-------------------|---|---|-------|---|---|-------|---|---|---|---|---|-----|
| gct Ala | | | | | | | | | | | | 240 |
| gct Ala | | | | | | | | | | | | 288 |
| gaa Glu | | | | | | | | | | | | 336 |
| acc Thr | | | | | _ | - | | | _ | | | 384 |
| gaa Glu 130 | | | | | | | | | | | | 432 |
| tta Leu | | _ | | • | | | • | | _ | | _ | 480 |
| gat Asp | | | | | | | | | | | | 528 |
| gct Ala | | | | | | | | | | | | 576 |
| gca Ala | | | _ | | | - | | | | | - | 624 |
| gtt Val 210 | | | _ | | | | _ | _ | | | | 672 |
| aaa Lys | - | | | - | | _ | _ | | | - | | 720 |

| 61y 999 | cct Pro | aat Asn | ctt Leu | aca Thr 245 | gaa Glu | ata Ile | agt Ser | aaa Lys | aaa Lys 250 | att Ile | aca Thr | gaa Glu | tct Ser | aac Asn 255 | gça Ala | 768 |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| gtt Val | gtt Val | ctg Leu | gct Ala 260 | gtg Val | aaa Lys | gaa Glu | att Ile | gaa Glu 265 | act Thr | ttg Leu | ctt Leu | gca Ala | tct Ser 270 | ata Ile | gat Asp | 816 |
| gaa Glu | ctt Leu | gct Ala 275 | act Thr | aaa Lys | gct Ala | att Ile | ggt Gly 280 | aaa Lys | aaa Lys | ata Ile | caa Gln | çaa Gln 285 | aat Asn | ggt Gly | ggt Gly | 864 |
| tta Leu | gct Ala 290 | gtc Val | gaa Glu | yja 2c2 | GJY 999 | cat His 295 | aat Asn | gga Gly | aca Thr | ttg Leu | tta Leu 300 | gca Ala | ggt Gly | gct Ala | tat Tyr | 912 |
| Thr 305 | Ile | Ser | ГЛЭ | Leu | ata Ile 310 | Thr | Gln | ŗàa | Leu | Авр 315 | Gly | Leu | Lys | Asn | Ser 320 | 960 |
| Glu | Lys | Leu | Ľув | G1u 325 | aaa Lys | Ile | Glu | Asn | Ala 330 | Lys | Lys | Суз | Ser | G1u 335 | Asp | 1008 |
| ttt Phe | act Thr | aaa Lys | aaa Lys 340 | cta Leu | gaa Glu | gga Gly | gaa Glu | cat His 345 | gcg Ala | caa Gln | ctt Leu | gga | att Ile 350 | Glu | aat Asn | 1056 |
| gtt Val | act Thr | gat Asp 355 | Glu | aat Asn | gca Ala | aaa Lys | aaa Lys 360 | Ala | att Ile | tta Leų | ata Ile | aca Thr 365 | gat Asp | gca Ala | gct Ala | 1104 |
| aaa Lys | gat Asp 370 | Lys | ggc | gct Ala | gca Ala | gag Glu 375 | Leu | gaa Glu | aag Lys | cta Leu | ttt Phe 380 | Lys | gca Ala | gta Val | gaa Glu | 1152 |
| aac Asn 385 | Leu | gca Ala | aaa Lys | gca Ala | gct Ala 390 | Lys | gag | atg Met | ctt Leu | gct Ala 395 | Asn | tca Ser | gtt Val | aaa Lys | gag Glu 400 | 1200 |
| ctt Leu | | | | | | | | | | | | | | | | 1205 |

<210> 82 <211> 401 <212> PRT <213> ospC Chimera

<400> 82

Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ala Leu Ile Gly Cys Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Asn Asn Ser Gly Lys 25 Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Val Leu Leu Ala Val Lys Glu Val Glu Ala Leu Leu Ser Ser Ile Asp Glu Ile Ala Ala Lys Ala Ile Gly Lys Lys Ile His Gln Asn Asn Gly Leu Asp Thr Glu Tyr Asn His Asn Gly Ser Leu Leu Ala Gly Ala Tyr Ala Ile 105 Ser Thr Leu Ile Lys Gln Lys Leu Asp Gly Leu Lys Asn Glu Gly Leu 120 Lys Glu Lys Ile Asp Ala Ala Lys Lys Cys Ser Glu Thr Phe Thr Asn Lys Leu Lys Glu Lys His Thr Asp Leu Gly Lys Glu Gly Val Thr Asp 150 155 Ala Asp Ala Lys Glu Ala Ile Leu Lys Thr Asn Gly Thr Lys Thr Lys 170 Gly Ala Glu Glu Leu Gly Lys Leu Phe Glu Ser Val Glu Val Leu Ser 185 Lys Ala Ala Lys Glu Met Leu Ala Asn Ser Val Lys Glu Leu Thr Ser 200 Pro Val Val Ala Glu Ser Pro Lys Lys Pro Ser Met Val Asn Asn Ser Gly Lys Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys 230 235 Gly Pro Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Glu Ser Asn Ala Val Val Leu Ala Val Lys Glu Ile Glu Thr Leu Leu Ala Ser Ile Asp 265 Glu Leu Ala Thr Lys Ala Ile Gly Lys Lys Ile Gln Gln Asn Gly Gly 280 Leu Ala Val Glu Ala Gly His Asn Gly Thr Leu Leu Ala Gly Ala Tyr 295 Thr Ile Ser Lys Leu Ile Thr Gln Lys Leu Asp Gly Leu Lys Asn Ser 305 315

Glu Lys Leu Lys Glu Lys Ile Glu Asn Ala Lys Lys Cys Ser Glu Asp 330 Phe Thr Lys Lys Leu Glu Gly Glu His Ala Gln Leu Gly Ile Glu Asn 350 345 Val Thr Asp Glu Asn Ala Lys Lys Ala Ile Leu Ile Thr Asp Ala Ala 360 Lys Asp Lys Gly Ala Ala Glu Leu Glu Lys Leu Phe Lys Ala Val Glu 380 375 Asn Leu Ala Lys Ala Ala Lys Glu Met Leu Ala Asn Ser Val Lys Glu 390 Leu <210> 83 <211> 1236 <212> DNA <213> ospC Chimera <220> <221> CDS <222> (1) ... (1236) <400> 83 atg aga tta tta ata gga ttt gct tta gcg tta gct tta ata gga tgt 48 Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ala Leu Ile Gly Cys 96 gea caa aaa ggt get gag tea att gga tee tgt agt aat tea ggg aaa Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Ser Asn Ser Gly Lys 144 ggt ggg gat tot gca tot act aat oot get gac gag tot gcg aaa ggg Gly Gly Asp Ser Ala Ser Thr Asn Pro Ala Asp Glu Ser Ala Lys Gly cet aat ett aca gaa ata age aaa aaa att aca gat tet aat gea tit 192 Pro Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Phe 50 55 240 gta ctt gct gtt aaa gaa gtt gag act ttg gtt tta tct ata gat gaa Val Leu Ala Val Lys Glu Val Glu Thr Leu Val Leu Ser Ile Asp Glu 65 70 ctt gct aag aaa gct att ggt caa aaa ata gac aat aat aat ggt tta 28B Leu Ala Lys Lys Ala Ile Gly Gln Lys Ile Asp Asn Asn Asn Gly Leu

| | gçt Ala | | | | | | | | | | | | | | | 336 |
|------------|-------------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|-------|
| | tca Ser | | | | | | | | | | | | | | | 384 |
| | tta Leu 130 | | | | | | | | | | | | | | | 432 |
| | aat Asn | | | | | | | | | | | | | | | 480 |
| | gat Asp | | | | | | | | | | | | | | | 528 |
| | aaa Lys | | | | | | | | | | | | | | | 576 |
| | tta Leu | | | | | | | | | | | | | | | 624 |
| | agt Ser 210 | | | | | | | | | | | | | | | 672 · |
| | tca Ser | | | | | | | | | | | | | | | 720 |
| | cct Pro | | | | | | | | | | | | | | | 768 |
| | tta Leu | | | | | | | | | | | | | | | 816 |
| gaa Glu | ctt Leu | tct Ser 275 | aaa Lys | gct Ala | att Ile | ggt Gly | aaa Lys 280 | aaa Lys | ata Ile | aaa Lys | aat Asn | gat Asp 285 | ggt Gly | act Thr | tta Leu | 864 |

| gat Asp | Sau Yau Sac | gaa Glu | gca Ala | aat Aen | cga Arg | aac Asn 295 | gaa Glu | tca Ser | ttg Leu | ata Ile | gca Ala 300 | GJY Gga | gct Ala | tat Tyr | gaa Glu | 912 |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| ata Ile 305 | tca Ser | aaa Lys | cta Leu | ata Ile | aca Thr 310 | caa Gln | aaa Lys | tta Leu | agt Ser | gta Val 315 | ttg Leu | aat Asn | tca Ser | gaa Glu | gaa Glu 320 | 960 |
| tta Leu | aag Lys | ааа ҍув | aaa Lys | att Ile 325 | aaa Lys | gag Glu | gct Ala | aag Lys | gat Asp 330 | tgt Cys | tcc Ser | çaa Gln | aaa Lys | ttt Phe 335 | act Thr | 1008 |
| aot Thr | aag Lys | cta Leu | aaa Lys 340 | gat Asp | agt Ser | cat His | gca Ala | gag Glu 345 | ctt Leu | ggt Gly | ata Ile | caa Gln | agc Ser 350 | gtt Val | çag Gln | 1056 |
| gat Asp | gat Asp | aat Aen 355 | gça Ala | aaa Lys | aaa Lys | gct Ala | att Ile 360 | tta Lou | aaa Lys | aca Thr | cat His | gga Gly 365 | Thr | aaa Lys | gac Asp | 1104 |
| nag Lys | ggt Gly 370 | gct Ala | aaa Lys | gaa Glu | ctt Leu | gaa Glu 375 | gag Glu | tta Leu | ttt Phe | aaa Lys | tca Ser 380 | cta Leu | gaa Glu | agc Ser | ttg Leu | 1152 |
| | Lys | | | | | Ala | | | | | | | | | aca Thr 400 | 1200 |
| | cct Pro | | | | Glu | | | | | | | | | | | 1236 |

<210> 84 <211> 411 <212> PRT <213> OSPC Chimera

THAT ODE CHAMEL

<400> B4

 Met Arg Leu Leu Ile Gly Phe Ala Leu Ala Leu Ala Leu Ile Gly Cys

 1
 5
 10
 15

 Ala Gln Lys Gly Ala Glu Ser Ile Gly Ser Cys Ser Asn Ser Gly Lys
 20
 25
 30

 Gly Gly Asp Ser Ala Ser Thr Asn Pro Ala Asp Glu Ser Ala Lys Gly
 35
 40
 45

Pro Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala Phe Val Leu Ala Val Lys Glu Val Glu Thr Leu Val Leu Ser Ile Asp Glu Leu Ala Lys Lys Ala Ile Gly Gln Lys Ile Asp Asn Asn Asn Gly Leu Ala Ala Leu Asn Asn Gln Asn Gly Ser Leu Leu Ala Gly Ala Tyr Ala 105 Ile Ser Thr Leu Ile Thr Glu Lys Leu Ser Lys Leu Lys Asn Leu Glu 120 Glu Leu Lys Thr Glu Ile Ala Lys Ala Lys Lys Cys Ser Glu Glu Phe 135 Thr Asn Lys Leu Lys Ser Gly His Ala Asp Leu Gly Lys Gln Asp Ala 150 155 Thr Asp Asp His Ala Lys Ala Ala Ile Leu Lys Thr His Ala Thr Thr 170 Asp Lys Gly Ala Lys Glu Phe Lys Asp Leu Phe Glu Ser Val Glu Gly 185 Leu Leu Lys Ala Ala Gln Val Ala Leu Thr Asn Ser Val Lys Glu Leu 200 Thr Ser Pro Val Val Ala Glu Ser Pro Lys Lys Pro His Met Ala Asn 215 Asn Ser Gly Gly Asp Ser Ala Ser Thr Asn Pro Asp Glu Ser Ala Lys 235 230 Gly Pro Asn Leu Thr Val Ile Ser Lys Lys Ile Thr Asp Ser Asn Ala 245 250 Phe Leu Leu Ala Val Lys Glu Val Glu Ala Leu Leu Ser Ser Ile Asp 265 Glu Leu Ser Lys Ala Ile Gly Lys Lys Ile Lys Asn Asp Gly Thr Leu 280 Asp Asn Glu Ala Asn Arg Asn Glu Ser Leu Ile Ala Gly Ala Tyr Glu 295 Ile Ser Lys Leu Ile Thr Gln Lys Leu Ser Val Leu Asn Ser Glu Glu 315 310 Leu Lys Lys Lys Ile Lys Glu Ala Lys Asp Cys Ser Gln Lys Phe Thr 330 325 Thr Lys Leu Lys Asp Ser His Ala Glu Leu Gly Ile Gln Ser Val Gln 345 Asp Asp Asn Ala Lys Lys Ala Ile Leu Lys Thr His Gly Thr Lys Asp 360 Lys Gly Ala Lys Glu Leu Glu Glu Leu Phe Lys Ser Leu Glu Ser Leu 380 375 Ser Lys Ala Ala Gln Ala Ala Leu Thr Asn Ser Val Lys Glu Leu Thr 390 395 Asn Pro Val Val Ala Glu Ser Pro Lys Lys Pro

405

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<210> 85
<211> 192
<212> PRT
<213> borrelia burgdorferi
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<400> 85 Cys Asn Asn Ser Gly Lys Asp Gly Asn Thr Ser Ala Asn Ser Ala Asp Glu Ser Val Lys Gly Pro Asn Leu Thr Glu Ile Ser Lys Lys Ile Thr Glu Ser Asn Ala Val Val Leu Ala Val Lys Glu Val Glu Thr Leu Leu Thr Ser Ile Asp Glu Leu Ala Lys Ala Ile Gly Lys Lys Ile Lys Asn Asp Val Ser Leu Asp Asn Glu Ala Asp His Asn Gly Ser Leu Ile Ser Gly Ala Tyr Leu Ile Ser Thr Leu Ile Thr Lys Lys Ile Ser Ala Ile Lys Asp Ser Gly Glu Leu Lys Ala Glu Ile Glu Lys Ala Lys Lys Cys 100 Ser Glu Glu Phe Thr Ala Lys Leu Lys Gly Glu His Thr Asp Leu Gly 120 Lys Glu Gly Val Thr Asp Asp Asn Ala Lys Lys Ala Ile Leu Lys Thr 135 Asn Asn Asp Lys Thr Lys Gly Ala Asp Glu Leu Glu Lys Leu Phe Glu 150 Ser Val Lys Asn Leu Ser Lys Ala Ala Lys Glu Met Leu Thr Asn Ser 170 Val Lys Glu Leu Thr Ser Pro Val Val Ala Glu Ser Pro Lys Lys Pro 185

<210> 86 <211> 191 <212> PRT <213> borrelia burgdorferi

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